

Title (en)
AN IMAGING SYSTEM AND METHOD WITH STITCHING OF MULTIPLE IMAGES

Title (de)
BILDGEBENDES SYSTEM UND -VERFAHREN MIT STITCHING MEHRERER BILDER

Title (fr)
SYSTÈME ET PROCÉDÉ D'IMAGERIE PAR PIQUAGE D'IMAGES MULTIPLES

Publication
EP 3528210 A1 20190821 (EN)

Application
EP 18156749 A 20180214

Priority
EP 18156749 A 20180214

Abstract (en)
An imaging system combines a probe for obtaining image data in respect of a structure of interest below a surface of a subject, and a camera for obtaining images of the surface of the subject. A surface model of the subject's surface is obtained, and the position and/or orientation of the probe is tracked on the surface. Image data acquired at different positions and orientations is stitched based on the tracked position of the probe.

IPC 8 full level
G06T 7/77 (2017.01); **G06T 7/30** (2017.01)

CPC (source: EP US)
G06T 7/0012 (2013.01 - US); **G06T 7/30** (2016.12 - EP); **G06T 7/586** (2016.12 - US); **G06T 7/77** (2016.12 - EP); **G06T 7/97** (2016.12 - US); **A61B 8/5253** (2013.01 - EP); **G01S 7/52065** (2013.01 - EP); **G06T 2207/10108** (2013.01 - US)

Citation (applicant)

- US 5997479 A 19991207 - SAVORD BERNARD J [US], et al
- US 6013032 A 20000111 - SAVORD BERNARD J [US]
- US 6623432 B2 20030923 - POWERS JEFFRY E [US], et al
- US 6283919 B1 20010904 - ROUNDHILL DAVID N [US], et al
- US 6458083 B1 20021001 - JAGO JAMES R [US], et al
- US 6443896 B1 20020903 - DETMER PAUL ROSS [US]
- US 6530885 B1 20030311 - ENTREKIN ROBERT R [US], et al

Citation (search report)

- [X1] SUN SHIH-YU ET AL: "Probe Localization for Freehand 3D Ultrasound by Tracking Skin Features", 14 September 2014, MEDICAL IMAGE COMPUTING AND COMPUTER-ASSISTED INTERVENTION - MICCAI 2015 : 18TH INTERNATIONAL CONFERENCE, MUNICH, GERMANY, OCTOBER 5-9, 2015; PROCEEDINGS; [LECTURE NOTES IN COMPUTER SCIENCE; LECT.NOTES COMPUTER], SPRINGER INTERNATIONAL PUBLISHING, CH, ISBN: 978-3-319-69952-3, ISSN: 0302-9743, XP047318889
- [A] BERGEN TOBIAS ET AL: "Stitching and Surface Reconstruction From Endoscopic Image Sequences: A Review of Applications and Methods", IEEE JOURNAL OF BIOMEDICAL AND HEALTH INFORMATICS, IEEE, PISCATAWAY, NJ, USA, vol. 20, no. 1, 1 January 2016 (2016-01-01), pages 304 - 321, XP011596591, ISSN: 2168-2194, [retrieved on 20151231], DOI: 10.1109/JBHI.2014.2384134
- [A] MOZAFFARI MOHAMMAD HAMED ET AL: "Freehand 3-D Ultrasound Imaging: A Systematic Review", ULTRASOUND IN MEDICINE AND BIOLOGY, NEW YORK, NY, US, vol. 43, no. 10, 14 July 2017 (2017-07-14), pages 2099 - 2124, XP085155762, ISSN: 0301-5629, DOI: 10.1016/J.ULTRASMEDBIO.2017.06.009
- [A] NAGARAJ YESHASWINI ET AL: "Advanced inside-out tracking approach for real-time combination of MRI and US images in the radio-frequency shielded room using combination markers", 2016 38TH ANNUAL INTERNATIONAL CONFERENCE OF THE IEEE ENGINEERING IN MEDICINE AND BIOLOGY SOCIETY (EMBC), IEEE, 16 August 2016 (2016-08-16), pages 2558 - 2561, XP032979698, DOI: 10.1109/EMBC.2016.7591252
- [A] YESHASWINI NAGARAJ ET AL: "US/MRI fusion with new optical tracking and marker approach for interventional procedures inside the MRI suite", CURRENT DIRECTIONS IN BIOMEDICAL ENGINEERING, vol. 2, no. 1, 30 September 2016 (2016-09-30), XP055476384, DOI: 10.1515/cdbme-2016-0101

Cited by
EP3900635A1; WO2021214101A1

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
EP 3528210 A1 20190821; CN 111727459 A 20200929; CN 111727459 B 20221206; EP 3752984 A1 20201223; EP 3752984 B1 20220406; JP 2021513412 A 20210527; US 2021012490 A1 20210114; WO 2019158350 A1 20190822

DOCDB simple family (application)
EP 18156749 A 20180214; CN 201980013224 A 20190129; EP 19703261 A 20190129; EP 2019052029 W 20190129; JP 2020543184 A 20190129; US 201916969689 A 20190129